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Errata—Read Mobility instead of Immobility.

How to Learn and How to Remember Anatomy.

A Lecture delivered before the Students of the medical class of the Tulane University of Louisiana, by EDMOND SOUCHON, M. D., Professor of Anatomy and of Clinical Surgery, Tulane University of Louisiana.

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None but a phenomenal mind could commit to memory all the facts concerning each and every one of the organs of the body. Ordinary minds must be aided by some means to relieve the memory. They would fail utterly, if they had not a series of landmarks, or guiding posts, which enable them to always know where they are and where they should go, to be in the right way. I have elaborated a guide to assist me. Before beginning the description of the numerous and more or less complicated organs of the human body, I propose to explain to you how I remember all the facts connected with the organs of the body and the course I pursue in describing them to you, so that you can do likewise, and remember more easily. This course is most inexorably systematic, and is always the same for each and every one of the organs, and applies as well to the liver, which is the largest organ in the body, as to the lenticular bone or ossicle of the ear, which is the smallest organ visible with the naked eye. Of course this guide for describing an organ, should be followed more or less closely according to the importance of the organ or of the facts connected with it. If some facts connected with one par-



ticular organ are of no importance, they should be skipped and stress should be laid upon those facts only which present a practical bearing or a scientific interest. It is essential to follow the guide systematically, as one fact is intimately connected with the following, and the place where to say it cannot very well be altered without disturbing the harmony of the whole ; there is a place for everything, and everything should be in its place. We must say at the beginning what belongs there, and not say it in the middle of the description ; again, we must say in the middle of it what belongs there, and not say it at the end. It seems difficult and complicated at first, but after you have committed the guide thoroughly to memory so as to know it at your tongue's end, without hesitating to think, you will see how smoothly it works and how much it will assist you. It is impossible to forget or skip anything as every few words almost in the guide, calls for an answer at its proper place, which answer is easily found and given by one who has studied the organ two or three times with this severe system and training.

In describing an organ, we must 1st give the DEFINITION of the organ, its *Synonymy* and *Etymology*; 2d, DIVIDE THE ORGAN INTO SEPARATE parts, if necessary; 3d, state the NUMBER; 4th, the DIMENSIONS; 5th, the SITUATION; 6th, the DIRECTION; 7th, the MEANS OF FIXITY; 8th, the IMMOBILITY; 9th, the SHAPE; 10th, the SURFACES, BORDERS, ANGLES or EXTREMITIES or BASE and APEX; 11th, the STRUCTURE.

The DEFINITION should be based upon the function of the organ to avoid repetition. It is important if the organ is a complex one such as are the sphenoid and temporal bones, to divide into several parts describing each part as a separate organ.

In connection with the NUMBER, we should say whether the organ under description is *single or double*, and whether it does not sometimes present *supernumerary organs*, such as the spleen, which in some instances presents one, two, or three supernumerary spleens; also whether, in

cases of double organs, they are known to *unite sometimes to form but one*, such as is the case occasionally with the two kidneys, which unite by their extremities to form the so-called horse shoe kidney. We must say also if the organ is ever known to be *absent altogether*.

You must give the DIMENSIONS of the organs, either by comparing the organ to some familiarly known object, or to some other organ of the human body, this is the *relative dimension*; or, by actual measurement in inches or fractions, these are the *absolute dimensions* of the organ.

When the organ is a hollow tube or a channel, you should give the dimensions of its calibre or bore.

The SITUATION must be first stated in a *general way*, or in regard to the region it occupies, then give its *relative position*, that is, the position it occupies in regard to the surrounding organs; thus for the spleen, we say it is situated in the left hypochondrium, below the diaphragm, above the kidney, behind the stomach, etc.

The DIRECTION of an organ should be stated first as *compared with the axis of the body*, and then, as compared with *its own axis*; thus, the fibula is vertically directed, compared to the axis of the body and is twisted as regards its own axis.

The MEANS OF FIXITY of organs are either connections by vessels, or adhesions through more or less loose or tough connective tissue or ligaments formed of folds of the membranes enclosing them, or they are supported by the organs situated beneath; thus, the liver has ligaments formed by the peritoneum; its upper border is closely adherent to the diaphragm by rather tough connective tissue; it is partially held in position by the hepatic veins passing from its substance to the Ascending Cava and it is supported as on a soft cushion by the stomach and intestines.

The MOBILITY of an organ affects the whole organ or a part of it only; thus, the head and part of body of the pancreas are firmly bound down, whereas the tail is more or less movable. The organ may be *movable by itself*, as

are the intestines, or its motion is *communicated by another organ*, such as the motion communicated from the dia-phragm to the liver and the kidneys. Finally, we should state whether at times the mobility does not become excessive without interfering with the functions; thus, we know that the kidney will sometimes escape from its bed of areolar and adipose tissue and float about in the abdomen without impairing its usefulness and therefore not constituting really a pathological condition, as it is only in some cases that the floating kidney requires interference.

The *SHAPE* of the organ comes in now. It is very important to define it accurately either by comparing it to a *geometrical figure*, or by comparing it to the shape of a familiarly known thing.

According to its shape, an organ presents **SURFACES, BORDERS, ANGLES, OR EXTREMITIES, OR A BASE AND AN APEX.**

In describing each *surface* you should mention the other names under which it is known, also its *extent*, whether it is large or small, also its *direction*, whether it is directed forwards or backwards, above or below, or in an intermediate direction; also the *form* or *shape* of that surface, whether it is plane or concave or convex, either in the vertical or the horizontal direction and if it is or is not the same all over the surface; also its *peculiarities* which are represented either by *projections* (folds, processes, tubercles, protuberances, ridges or crests), or by *depressions* (orifices, blind foramina, grooves, canals).

When enumerating numerous peculiarities, you should begin on the median line and then on the sides, proceeding from before backwards and from above downwards and within outwards. When describing a groove, say if it leads or not to a canal, its depth and the organs contained therein, artery, nerve, or a membranous process or a special organ. In mentioning an orifice describe its size, shape, boundaries, structure and contents. Finally, you should give the relations of the surface which may be with skin

(i. e. what part of the surface of the body it corresponds to); or with bones, joints, muscles, viscera, vessels, nerves.

The same course is to be followed in describing a *border*: First give *other names*, then its *extent*, then its *shape*; say if it is blunt or sharp, or bevelled at the expense of one surface or the other. All *thick borders* are divided into two edges or lips and an intermediate interstice, giving peculiarities and relations of each. Then its *relative direction*, whether vertical, horizontal, oblique, forwards or backwards, or above and below, or inwards or outwards; afterwards its *absolute direction*, rectilinear or sinuous, concave or convex. Next, mention its *peculiarities* and its *relations*, following the same course as for a surface.

The same course applies to the description of the *angles of the organ*, or to its *extremities*, or the *base and apex*, if it should have any.

It is now the time to describe the **STRUCTURE** of the organ.

It should always be preceded by its *color* and its *consistency*, as these properties are a consequence of the structure. In speaking of the consistency we must say whether the organ is soft or hard, friable or not, elastic, dilatable or retractile.

As regards the *structure*, all organs are provided with *envelopes*; a great many organs, most viscera, are provided with a *serous coat*, reduced to its epithelial layer. Next comes a *fibrous coat*, bearing or not a special name or several names, varying in thickness and resistance, more or less elastic, presenting an external surface more or less closely connected with the surrounding tissues and organs, an internal surface more or less intimately connected with the proper tissue or substance of the organ and sending into this proper tissue, filaments or processes which divide the interior of the organ into a large number of alveoles, in which are deposited the proper or characteristic anatomical elements of the organ. Almost always, the fibrous coat is reflected at the point called the *hilus*, into the inte-

rior of the organ, and then divides off into smaller and smaller processes, which join those given off from the inner surface and assist them in forming the alveoles. The whole of these processes and alveoles which they form, constitute what is called the *stroma or fibrous skeleton* of the organ which supports the more delicate elements of the proper substance. This stroma is more or less apparent, according to the organs ; it is, like the fibrous coat, formed of more or less dense connective tissue to which is often added elastic fibres and smooth muscular fibres, in greater or less quantity.

The proper or characteristic elements of an organ are either *cells or tubes, fibres or prisms*, arranged in a peculiar manner according to the organ, to which are added *capillary arteries, veins and lymphatics* and *nervous filaments*, which in many organs, present a characteristic and most interesting arrangement.

If the organ described, is a *gland with an excretory duct*, that duct should be described as a separate organ. If the organ is a hollow organ like the stomach, we should describe the *lining mucous membrane* with care, mentioning its consistency, thickness, elasticity, degree of adhesion of its *deep surface*, and in regard to its *free surface*, its color and the nature of its epithelium and the kind of glands which it contains.

Some organs present a peculiarly interesting CHEMICAL COMPOSITION which should be mentioned. Usually the point of interest lies in the relative amounts of the high organic and the less organic elements.

To be thorough, the mode of DEVELOPMENT OF THE ORGAN should now be given and the *changes* which it undergoes from its *embryonic formation* to the very *oldest age*.

Finally, in a last paragraph, we should mention the PECULIARITIES AND VARIETIES of the organ, due to the sex, to habits, trades, constitutions and individualities, nationalities and races.

All the above points and details are summarized in the following table :

GUIDE TO DESCRIBE AN ORGAN.

1. DEFINITION—Synonymy, Etymology, History.
2. DIVISION OF THE ORGAN into separate portions.
3. NUMBER. Single or Double—Supernumerary organs. Absence of the organ.
4. DIMENSIONS—1st. *Relative Size*, or size compared to other organs or to familiar objects. 2nd. *Absolute Size*: Diameters; transverse, vertical, antero-posterior. Calibre.
5. SITUATION—1st. *General Situation* or region it occupies. 2nd. *Relative Situation* or compared to the surrounding organs.
6. DIRECTION—1st. Compared with *axis of the body*. 2nd. Compared with *its own axis*.
7. MEANS OF FIXITY—Vascular Connections.—Adhesions.—Ligaments.—Supported by other organs.
8. IMMOBILITY of the whole organ—of a part of it—*Intrinsic* immobility. *Extrinsic* Immobility or Communicated by other organs—Extent of Immobility—Exceptional Immobility.
9. SHAPE—1st. Compared to a geometrical figure. 2nd. Compared to the shape of a familiarly known object.
10. SURFACES:
—Synonymy:
—Direction: forwards or backwards.—Above or below.—Intermediate direction.
—Shape: Plane, Concave or Convex in the vertical or transverse direction.
—Peculiarities: Projections (folds, processes, ridges or crests, tubercles, protuberances). Depressions, orifices (size, shape, boundaries, structure, contents), blind foramina—grooves and canals (depth extent, contents, vessels or nerves or organs).
When enumerating peculiarities, begin on the median line and then on the sides; proceed from before backwards or from within outwards; or from above downwards.

—Relations: With skin (*i. e.* to what part of the surface it corresponds) or with bones, joints, muscles, viscera, vessels and nerves.

11. BORDERS:

—Synonymy.

—Dimensions.

—Direction: 1st. *Relative Direction*, vertical, horizontal, oblique, forwards or backwards—or above or below—or inwards or outwards. 2nd. *Absolute direction*: straight, sinuous, concave, convex.

—Shape: Blunt or Sharp, or Bevelled at the expense of one surface or the other.

—Peculiarities, } as for surfaces.
—Relations,

All Thick Borders ought to be subdivided into *two edges* or lips and an *interstice*. Give for each: peculiarities, insertions and relations.

12. ANGLES OR EXTREMITIES: same as borders.

Base and apex: same also.

13. STRUCTURE:

—Color.

—Consistency: Density, Friability, Elasticity, Retractility.

—Envelopes or Coats: Thickness, Resistance, Elasticity.

External Surface (relations, adhesions). Internal Surface (relations, adhesions, processes from internal surface). Reflection into the interior of the organ.

—Stroma: Is delicate or apparent; is composed of connective tissue, or elastic, smooth muscular fibres.

—Proper or Characteristic Elements: Cells, Tubes, Fibres, Prisms.

—Capillary Arteries: Veins, Lymphatics, Nerves.

—Excretory Duct of Glands (as a separate organ).

—Lining Membrane of a Hollow Organ: Thickness, Consistency, Elasticity, Adhesive Surface, (degree of adhesion); Free Surface; color, peculiarities, epithelium, glands.

14. CHEMICAL COMPOSITION: Organic, Inorganic Elements.
15. DEVELOPMENT OF THE AGES.
16. PECULIARITIES OR VARIETIES, or anomalies due to Sex, Habits, Trades, Constitutions, Individualities, Nationalities, Races.

